

Work Order ID 117867 -2

May-23-14 10:13:07 AM

117867

Page 1

Item ID: D2916-1

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: Cable Guard, 212 Skidtube

Stop *NS2*

Start Date: 5/05/14 Start Qty: 8.00

Required Date: 5/05/14 Req'd Qty: 8.00

Cust Item ID:

Customer:

Reference:

Approvals: Process Plan: W Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*
Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D2916	Rev D								

102

0.00

102

Purchasing

Purchasing

Memo

ISSUE PO 24350

1-Cut as per Dwg D2916 Dwg Rev: _____ Prog Rev: _____ 2-
Debur if necessary

0.00

CL 14/05/26 8

105

Receive & Inspect for Damage & Mat'l Certs

0.00

105

Packaging

Packaging

Memo

0.00

8X 8/14/6-10

115

QC6- Inspect dimensions to drawing

0.00

115

QC

Quality Control

Memo

0.00

CL 14/08/21

8 8

Work Order ID 117867

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Page 2

May-23-14 10:13:07 AM

Item ID: D2916-1 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Cable Guard, 212 Skidtube
 Start Date: 5/05/14 Start Qty: 8.00 ***8*** Cust Item ID:
 Required Date: 5/05/14 Req'd Qty: 8.00 ***8*** Customer:
 Reference:

Approvals: Process Plan: Date: Tooling: Date: Run Start ***NR1***
 QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
120	HAAS CNC VERTICAL MACHINING #1								DAS 20 9-89 14-08-23
HAAS 1	Memo	0.00							
HAAS CNC vertical machine #1	BATCH: 1- Mill as per Folio FB077 Rev: <u>AA</u> & Dwg D2916 Rev: <u>D</u> 2-Deburr per dwg D2916								
130	QC2- Inspect parts off machine FAI/FAIB	0.00							
130									DAS 20 9-89 14-08-23
QC	Memo	0.00							
Quality Control									
140	QC8- Inspect parts - second check	0.00							
140									DAS 08 9-89
QC	Memo	0.00							
Quality Control									

B. a 14/09/06

7

Work Order ID 117867

May-23-14 10:13:07 AM

117867

Page 3

Item ID: D2916-1 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Cable Guard, 212 Skidtube
 Start Date: 5/05/14 Start Qty: 8.00 ***8*** Cust Item ID:
 Required Date: 5/05/14 Req'd Qty: 8.00 ***8*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Identify as per dwg & Stock Location: <u>8T164</u>	0.00							
150									
Packaging	Memo	0.00				<u>7x</u>		<u>14-9-8</u>	DAS 26 9-89
Packaging									
160	QC21- Final Inspection - Work Order Release	0.00							
160									
QC	Memo	0.00						<u>MLJ 14-09-09</u>	
Quality Control								<u>MLJ 14-09-09</u>	

Picklist Print

May-23-14 10:13:07 AM

Page 1

Work Order ID: 117867

117867

Parent Item: D2916-1

D2916-1

Parent Item Name: Cable Guard, 212 Skidtube

Start Date: 5/05/14

Required Date: 5/05/14

Start Qty: 8.00

Required Qty: 8.00

Comments: IPP Rev:A New Issue 06-06-19 JLM
IPP Rev:B Now water jet 06-07-14 EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MUHMWB10		Purchased	No			100	sf	400.0000	0.475	4			

MUHMWB10

UHMW 1" Black - 48"x120" Tivar Mfg.#52480104

CL 4/05/28

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
MAT018	400	
m128267	47	
m128668	353	

CL 4/05/28 m129293

DART AEROSPACE LTD		Work Order: 117867
Description: Cable Guard		Part Number: D2916-1
Inspection Dwg: D2916	Rev: D	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
1.75	+/-0.030	1.750	✓		SLO8	Vern
38.94	+/-0.030	38.900	✓		SLO1	Tape
35.94	+/-0.030	35.910	✓			
32.25	+/-0.030	32.250	✓			
29.00	+/-0.030	29.000	✓			
15.00	+/-0.030	15.000	✓			
11.31	+/-0.030	11.310	✓			
3.19	+/-0.030	3.190	✓		SLO8	Vern
2.000	+/-0.010	2.010	✓		"	
21.125	+/-0.010	21.125	✓		SLO1	Tape
37.938	+/-0.010	37.938	✓		"	
Ø0.438	+0.005/-0.000	.438	✓		SLO8	Vern
25.00	+/-0.030	25.000	✓		SLO1	Tape
24.00	+/-0.030	24.000	✓		"	
16.50	+/-0.030	16.500	✓		"	
15.01	+/-0.030	15.016	✓		"	
3.25	+/-0.030	3.250	✓		SLO8	Vern
2.33	+/-0.030	2.350	✓		"	
A-A	0.78	.785	✓		"	
	0.70	.687	✓		"	
B-B	0.140	.145	✓		SLO2	Mic
	0.360	.358	✓		"	
	0.88	.860	✓		SLO8	Vern
C-C	1.31	1.302	✓		"	
	0.78	.750	✓		"	
	0.33	.325	✓		SLO2	Mic
D-D	0.37	.370	✓		"	
	Ø0.438	.438	✓		SLO8	Vern
	Ø0.875	.874	✓		"	
E-E	Ø0.260	.260	✓		"	
	0.37	.370	✓		SLO2	Tape Mic
	Ø0.875	.874	✓		SLO8	Vern
J-J	1.44	1.455	✓		"	
	0.063	.053	✓		"	

DAS

Measured by: 20 9-99	Audited by: H.A. DAS 08 9-99	Preliminary Approval:
Date: 14-08-21	Date: 14/09/06	Date:

Rev	Date	Change	Revised by	Approved
A	04.01.12	New Issue	KJ/RF	
B	13.02.27	Dwg Rev updated	KJ	

117867 MJS
1405-06

NOTES:

- 1) MATERIAL: UHMW BLACK TIVAR 1000 VIRGIN MATERIAL
REF DART SPEC MUHMB10
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK ALL UNMARKED RADII 0.020 TO 0.040
- 6) IDENTIFICATION: ENGRAVE P/N ON LOWER SIDE TO MAX DEPTH OF 0.010 AND MIN RADIUS OF 0.010
- 7) WEIGHT:
 - D2916-1 = 1.37 lbs
 - D2916-3 = 2.33 lbs
 - D2916-5 = 1.19 lbs
 - D2916-7 = 0.96 lbs
- 8) ENGRAVE TWO DART LOGOS (OPPOSITE AS SHOWN) ON UPPER SIDE TO MAX DEPTH OF 0.015 AND MIN RADIUS OF 0.250
- 9) MACHINE CONSTANT SECTION A-A
- 10) MACHINE CONSTANT SECTION B-B
- 11) MACHINE CONSTANT SECTION C-C
- 12) MACHINE CONSTANT SECTION F-F
- 13) MACHINE CONSTANT SECTION G-G
- 14) 25° ANGLE OF TRANSITION BETWEEN SECTIONS WITH MIN RADIUS OF 0.50
- 15) 50° ANGLE OF TRANSITION BETWEEN SECTIONS WITH MIN RADIUS OF 0.50
- 16) MACHINE SLOT WITH 0.063 RADIUS OF TRANSITION BETWEEN SECTIONS
- 17) ALL HOLES DRILLED ON CENTERLINES

D2916-1

D2916-3

D2916-5

D2916-7

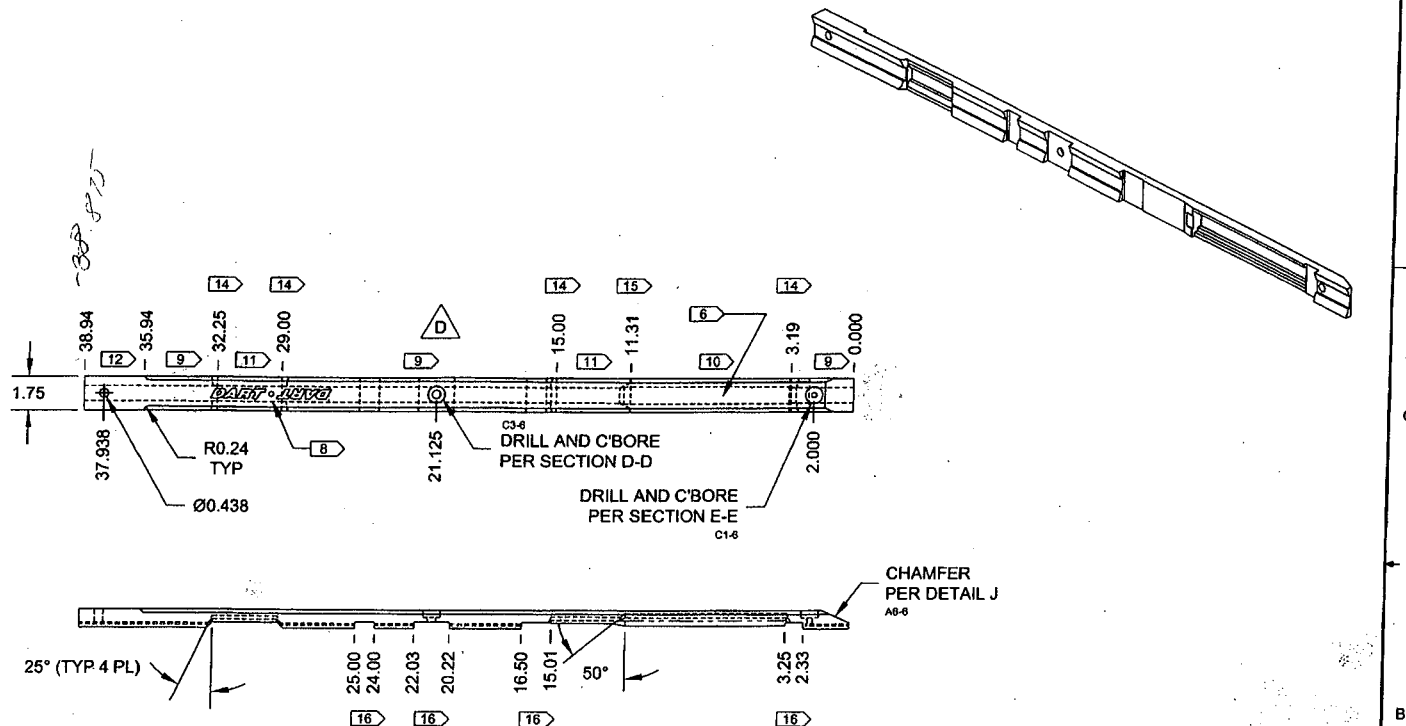
RELEASED
2011-11-02
MP

D	REVISE MACHINE SLOT. (ZN C5-2, C4-4, C4-5, C6-5) REVISE SECTIONS D-D, L-L, N-N	RF	11.10.07
C	REVISE D-D; ADD L-L, M-M & N-N; FOR D4406-041/-043 COMPATIBILITY	RF	11.08.17
B	ADD K-K FOR D2521 COMPATIBILITY	CP	00.02.24
A	NEW ISSUE	CP	99.09.29
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN	RF		
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	11.10.07		

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D2916
REV. D
SHEET 1 OF 6
TITLE CABLE GUARD
SCALE NTS

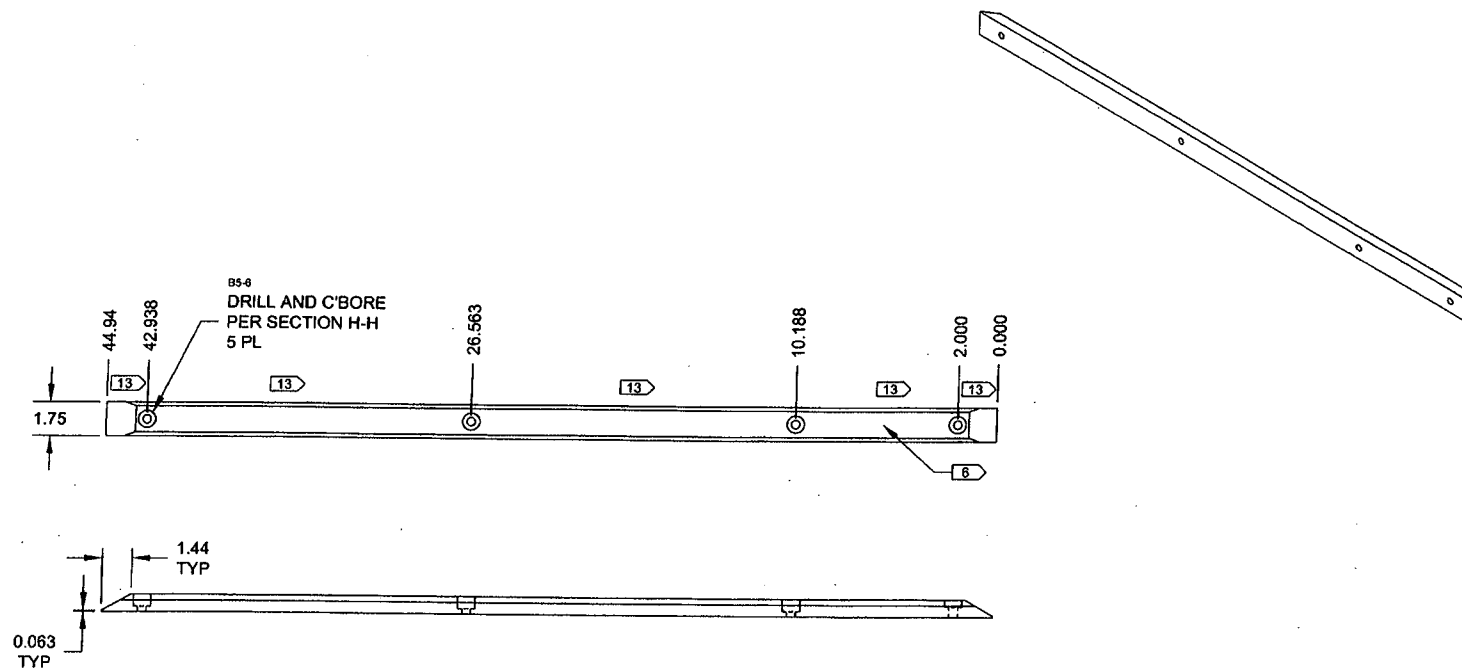
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D2916-1

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2011-11-02
AND

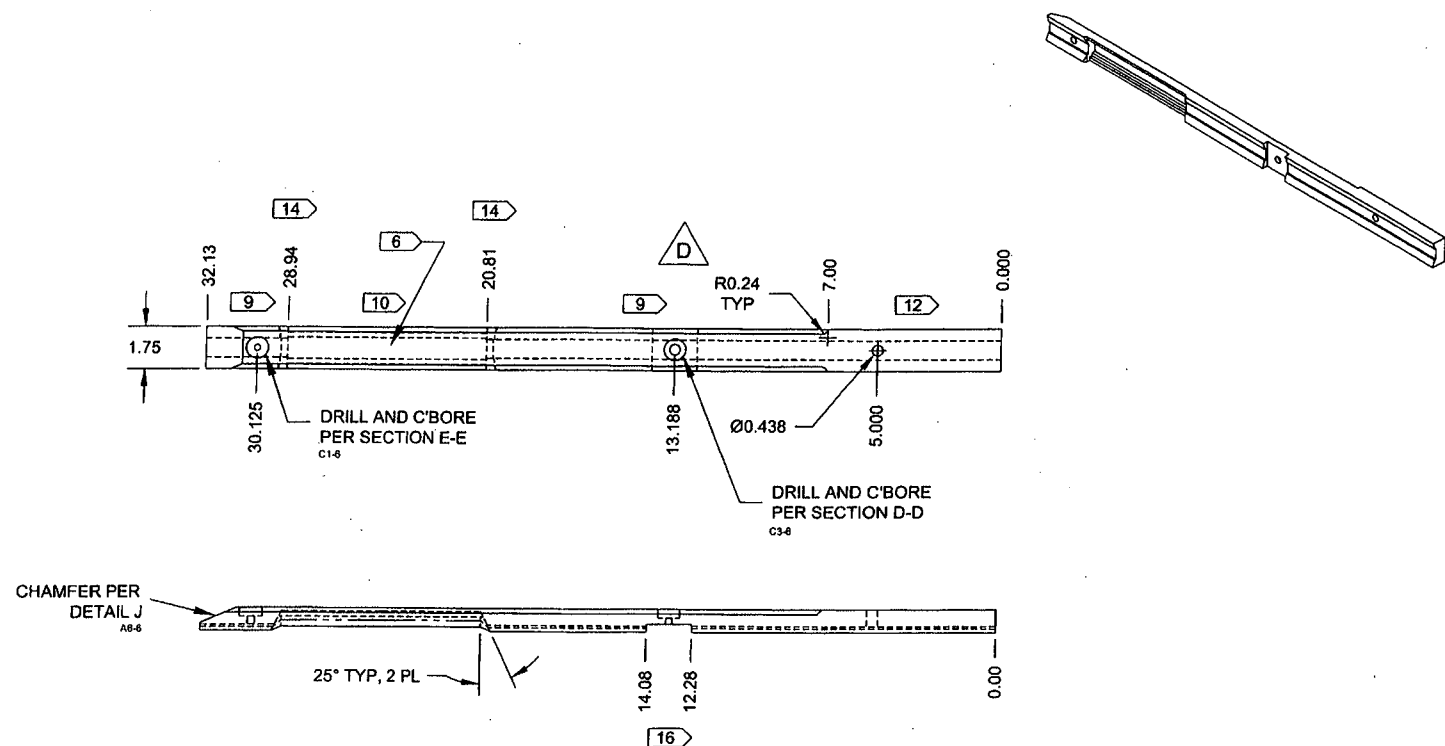
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MFG. APPR.	4	D2916	SHEET 2 OF 6
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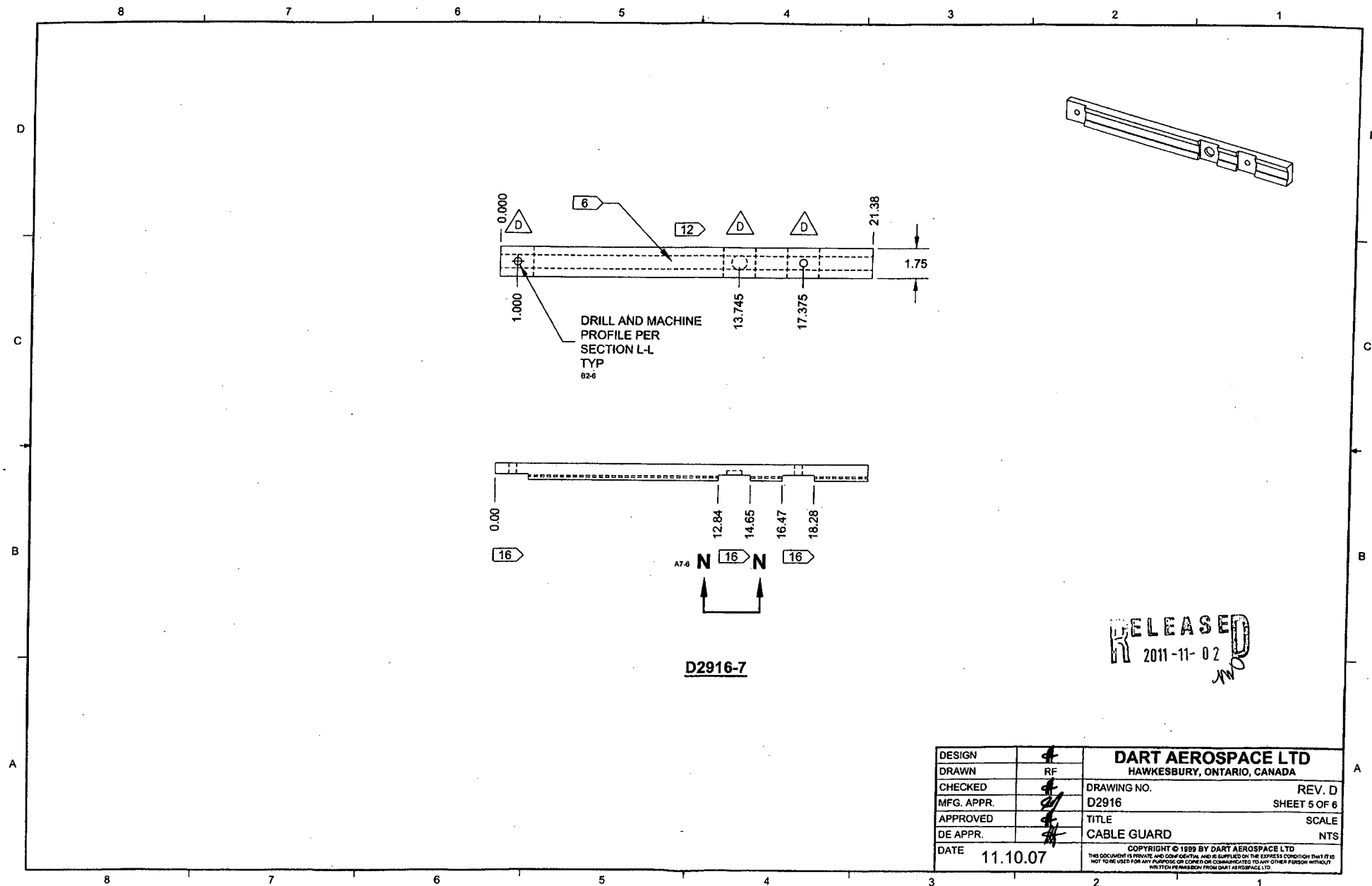
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APPROVED	<i>[Signature]</i>	TITLE	SCALE
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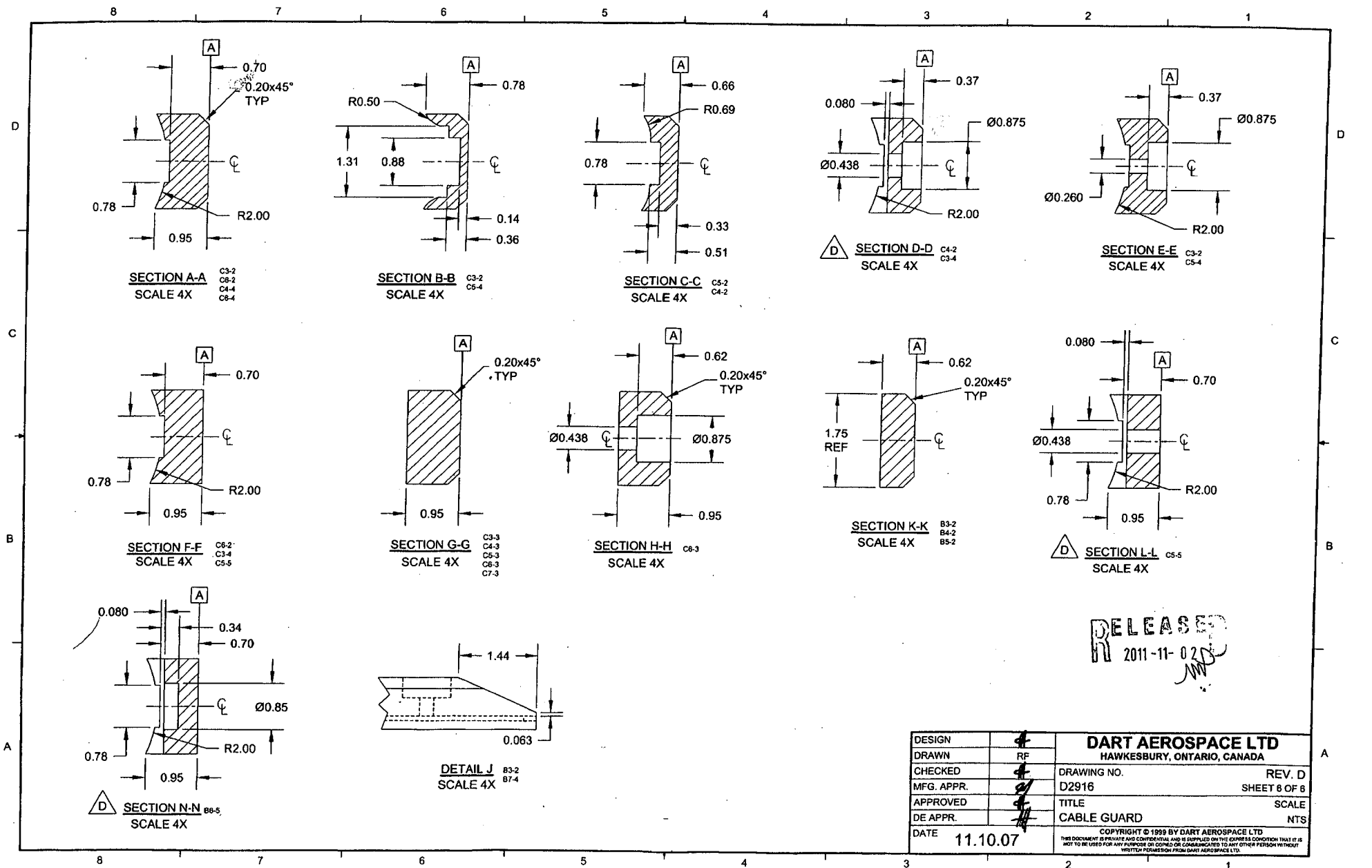
D2916-5

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2011-11-02
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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO24350

Purchase Order Date 5/26/2014

PO Print Date 5/26/2014

Page Number 2 of 4

Order From :

VC-TPI001

TPI INDUSTRIES INC.
148 RUE GOODFELLOW
DELSON, QUEBEC J5B 1V4
CANADA

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone 450-633-0484

Ship To Contact

Ship To Phone

Ship Via:

Day & Ross collect

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Net 30

Currency

CAD

FOB

Destination-Collect

Line Total: \$349.

4 117436

D2521 BEARPAW

6/13/2014

12.00 ✓

\$55.36

\$664.

Yes

6/13/2014

CUT BLANK AS PER FILE

Line Total: \$664.

5 115766

D2671 BEARPAW

6/13/2014

4.00 ✓

\$24.42

\$97.

Yes

6/13/2014

CUT BLANK AS PER FILE

Line Total: \$97.

6 117867

D2916-1 CABLE GUARD

6/13/2014

8.00 ✓

\$21.70

\$173.

Yes

6/13/2014

CUT BLANK AS PER FILE

Line Total: \$173.

SP/4-6-10

Note:

5/26/2014

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____	DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input checked="" type="checkbox"/> Suspected Unapproved <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS			
Part No. _____		Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>
NCR No. _____		Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input checked="" type="checkbox"/>	Quality <input type="checkbox"/>
		Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>
		Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design <input checked="" type="checkbox"/>	14.08.21	115	8	COT BROUGHT IS 38.88" IN LIEU OF 38.94" RC. Program set to supply not correct length. Program RC, WA, AS, BOO	DAS 22 9-89 14.08.21	OK TO USE AS IS. NO IMPACT ON INSTALLATION.	DAS 20 9-89 14-08-21	 14/08/21	 14/08/22
Doc/Data <input type="checkbox"/>									
Equip/Tooling <input type="checkbox"/>									
Handling/Pre <input type="checkbox"/>									
Material <input type="checkbox"/>									
Operator <input type="checkbox"/>									
Offset/Setup <input type="checkbox"/>									
Process <input type="checkbox"/>									
Supplier <input type="checkbox"/>									
Training <input type="checkbox"/>									
Transport <input type="checkbox"/>									
Unapproved <input type="checkbox"/>									

FAULT CATEGORY

Landing Gear	General		
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input checked="" type="checkbox"/> Folio/Program	<input type="checkbox"/> Outside Dimensions
<input type="checkbox"/> Centre Not Concentric	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Grain	<input type="checkbox"/> Over/Under tolerance
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damage/Defect	<input type="checkbox"/> Hardware	<input type="checkbox"/> Part Incorrect
<input type="checkbox"/> Crimp/Kink/Ripple/Wave	<input type="checkbox"/> Burrs	<input type="checkbox"/> Inspection Incomplete/Unqualified	<input type="checkbox"/> Part Lost/Missing
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Instructions Incomplete/Unclear	<input type="checkbox"/> Part Moved
<input type="checkbox"/> Crushing	<input type="checkbox"/> Countersink	<input type="checkbox"/> Misaligned/off center	<input type="checkbox"/> Positioned Wrong
<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Mislabeled	<input type="checkbox"/> Power Loss/Surge
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Drawing	<input type="checkbox"/> Misread	<input type="checkbox"/> Pressure/Forced
<input type="checkbox"/> Marks/Chatter	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Off-set	<input type="checkbox"/> Set-up
<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Calibration	<input type="checkbox"/> Temperature/Cure
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Fit/Function	<input type="checkbox"/> Out of Sequence	<input type="checkbox"/> Weld
			<input type="checkbox"/> Wrong Stock Pulled
			<input type="checkbox"/> Other

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: Set Date: 14/12/08

QA Closed:

Date:

Work Order: <u>117867</u>	DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input checked="" type="checkbox"/> Work Order Update <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS			
Part No. <u>D2916-1</u>		Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>
NCR No. <u>144290</u>		Machining <input checked="" type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>
		Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>
		Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	14/9/5	120		Holes and groove are off center by ≈ 0.016 R.C. operator error / setup not cond.	DAS 12 9-89 14/9/5	Acceptable. Test fit shows that there is a lot of play when installed. Unlikely to cause fit problem	DAS 12 9-89 14/9/5	D.A. 14/09/06 DAS 08 9-89	DAS 16 9-89 14/09/22
Equip/Tooling									
Operator									
Material									
Setup <input checked="" type="checkbox"/>									
Other									
Process									
Supplier									
Training									
Unapproved									

FAULT CATEGORY

Landing Gear	General	
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Grain
<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Hardware
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damaged	<input type="checkbox"/> Inspection Incomplete
<input type="checkbox"/> Crushed/Crimped	<input type="checkbox"/> Burrs	<input type="checkbox"/> Instructions Incomplete/Unclear
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Maintenance
<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Countersink	<input type="checkbox"/> Mislabeled
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Misread
<input type="checkbox"/> Ripples in Bend	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Offset
<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Drawing	<input type="checkbox"/> Out of Calibration
<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Sequence
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio	<input type="checkbox"/> Outside Dimensions
		<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge
		<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input checked="" type="checkbox"/> Other
		<u>Set up</u> <hr/> <hr/> <hr/>